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or measured and, knowing the value in calories of the food given, the caloric value of all the food given must be summed up and charted thus:

- 7 A.M. Egg i; toast or bread, 1 slice, with butter grms. xx. coffee oz. vi with cream oz. ii and lactose grms. xxxv. Total, calories, 567.
- 9 A.M. Cocoa, with cream oz. iii and lactose grms. lx. Total, calories, 426.
- 11 A.M. Milk oz. vi, cream oz. ii, with lactose grms. xv. Total, calories 322.
- 1 P.M. Egg i, mashed potato grms. xxx, custard oz. iv, toast or bread 1 slice with butter grms. x, coffee oz. vi, with cream oz. ii, and lactose grms. xxxv. Total, calories, 857
- 3 P.M. Lemonade with lactose grms. 120. Total calories, 480.
- 5 P.M. 1 Egg; rice oz. iv, with cream oz. iii, and lactose grms. xx, bread, slices ii, with butter grms. xx, prunes iv, tea with cream oz. ii, lactose grms. xx. Total calories, 1146.
- 7 P.M. Lemonade with lactose grms. 120, albumen of 1 egg, Total calories, 530.
- 10 P.M. Cocoa with cream oz. iii, lactose grms. lx. Total calories, 426.
- 1 A.M. Milk oz. iv, with cream oz. ii. Total calories, 216.
- 4 A.M. Milk oz. iv, with cream oz. ii. Total calories, 216.

Total calories for 24 hours, 5186.

The caloric value of the different articles of food given are as follows: Rice, oz. i = 50 calories; cream of wheat, oz. i = 35 calories; oatmeal, oz. i = 35 calories; custard, when made by receipt (depends on ingredients) = 315 calories; bread slices, iii = 100 grms. or 200 calories; milk, 0 ii = 740 calories; milk, 0 i = 23 calories; cream, oz. i = 62 calories; lactose, grms. i = 4 calories; eggs, i = 80 calories; yolk = 30 calories; white = 50 calories; butter, oz. i = 225 calories; crackers, iv = 50 calories; mashed potato, tablespoonfuls iv = 100 calories, oz. i = 50 calories (if cream or butter added, amount to be charted); apple sauce, iv tablespoonfuls = 100 calories; stewed prunes, iv = 100 calories.

THE DOCTOR AND THE NURSE IN INDUSTRIAL ESTABLISHMENTS *

By LILLIAN D. WALD

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THE application of the established principles of safety, sanitation and hygiene to shop practice rests upon three fundamental conditions: (1) Intelligence and goodwill on the part of employers that they may desire

* Read in discussion at the meeting of the Academy of Political Science, Columbia, November 11, 1911. Reprinted from the *Proceedings of the Academy of Political Science*, Vol. II. No. 2, January, 1911.

to provide conditions which will insure well-ventilated, well-lighted and well-cleaned working places, to guard dangerous machinery and to furnish protection against fire. (2) Interest and responsibility on the part of employees that they may make concerted demand for sanitary standards and may co-operate not only in establishing these standards but also in maintaining them. (3) Enlightened opinion on the part of the public, that it may, through its knowledge of what constitutes good service, insure competent factory inspection and sustain protest against interference with the official integrity of the factory department.

But in addition to all these conditions, service to the individual in the shop is essential both for treatment and for education. The need for such service has led to the employment of trained people for this purpose. The discussion of general sanitary conditions too often brings no specific evidence of the relation of such conditions to individual ill-health; the work of the doctor and the nurse necessarily emphasizes the individual consequences of such conditions.

Many industrial establishments (the exact number cannot be ascertained, since the experiment is new and the printed information fragmentary and indefinite) employ doctors or nurses or both. Inquiry has been made of some twenty as to why they do so. Practically all make the same answer: "It pays!"—"It is a saving to the firm in prevention of infections and large hospital bills!"—"Our medical department is considered of economic value or it would not exist."

The employer testifies that he secures increased efficiency by having some one on the spot to whom the employees' illnesses may be reported. Serious effects from minor accidents are prevented by giving immediate aseptic treatment. Headaches, hysteria and small ailments can be controlled by the nurse through the application of common-sense on her part, and because the workers have confidence in her. The loss of an entire day's labor because of slight and temporary discomfort is often eliminated through the nurse's attentions.

A manufacturing company employing over 2600 persons reports that three years ago, before the establishment of a factory doctor or nurse, it was found upon careful study that an average of six men were absent from work daily owing to slight injuries, which were not serious in themselves but which had resulted in infection through lack of early attention. As the firm paid wages for a portion of the time employees were absent because of illness, there was a twofold loss to it, namely the wages paid and the decreased production, and in addition the reduced earnings and the suffering of the employees themselves. During the year ending October 31, 1910, after the employment of a nurse and physician, the

company reported that out of some four thousand minor injuries such as cuts, bruises and sprains, the infections resulting did not average more than four a month. The firm states that the experiment has been of value to the company and to the workers and has opened up avenues of usefulness undreamed of to them. Another firm reports important economic gains to them following the employment of doctor and nurse. In this establishment the girls work in pairs and the indisposition of one means the loss of the work of two. Another firm employing over 2500 people reports practically the same result and adds that it will hereafter increase the physicians and nurses as the number of employees grows larger.

Care for the health of operatives has induced the telephone companies to make interesting experiments. The effect of improved ventilation has had no more convincing demonstration than that described in the United States report on the companies. The result of ventilating unventilated rooms showed a marked improvement in the health of the girls in actual figures: $4\frac{9}{10}$ per cent. of the force were absent in 1906; $4\frac{5}{10}$ per cent. were absent in 1907, and only $1\frac{1}{10}$ per cent. were absent in 1908, after ventilation had been installed. Continuous study by people on the field would multiply such instances.

Such testimony as this is evidence of scientifically managed industries and perhaps is the more wholesome in that there is no attempt to assume the rôle of philanthropy, but a very frank and up-to-date acknowledgment of the good business policy that employs machinery of every kind to increase efficiency and reduce waste.

Important as is this saving to the employer and employee, the slogan, "It pays," is not in itself an appeal of sufficient loftiness to enlist the ardent support of the working people and the general public. Working people as a rule are not deeply interested in social-welfare work, since their most immediate pressure as they see it would be relieved by higher wages and shorter hours, and health protection is to them of remoter consequence. The Joint Board of Sanitary Control of the Cloak and Suit Industry is the most notable exception to this. Perhaps no social worker would be inclined to insist upon the special values of medical inspection and sanitary protection in shop and factory did he not see in the movement help towards a standardizing of work and hours.

There is a difference of opinion as to where the responsibility for the employment of the doctor or the nurse should rest. The benefit societies, long established, have accustomed men and women to an insurance against sickness for which they have themselves paid

in whole or in part. It seems natural for employees to assume that when they share the expense of the doctor and the nurse and when they have some authority in the administration of his or her work, their interests are more likely to be considered as important as those of the employer. On the other hand, manufacturers, while frankly acknowledging the economic gain to themselves, through better physical condition of their employees and through the elimination of lost time due to trifling ailments, also say that the service in the establishment is much better managed by the responsible heads of the plant. They declare that it is not desirable that first-aid treatment should in any way compete with the doctors' practice and that it should not be developed into medical clubs.

Some smaller industrial establishments not warranted in engaging the full time of a nurse have arranged with the visiting nurse associations in their communities for periodical visits from the nurse in the district; other firms that have the full time of a nurse have made satisfactory arrangements with a physician who can be called upon by the nurse when in her judgment his services are essential. The doctors are not eager to give their full time to the treatment of minor ailments and slight accidents, and one physician reports that the emergency cases which they are called upon to treat in factories where girls are employed are usually attacks of hysteria that can well be handled by the nurse alone, as can also such accidents as happen in box factories and similar industries. In naphtha dry-cleaning establishments the girls often suffer nervous attacks, loss of appetite and dizziness, and need general help and advice as much as medical care. In general it would be safe to say that the nurses are needed most where girls are employed and where the work does not involve serious accidents, but where the strain is severe from excessive speeding or where heat or noise is great.

Doctors are especially required for preventive work in the poisonous and dusty trades where regular periodical medical inspection should be given to all men and women exposed in order to defend them against the action of the poisons and to protect them against industrial tuberculosis. The presence of the nurse working with the doctor is of incalculable value in giving to him knowledge of minute symptoms that should help him in the handling of the hygiene of the industry as well as of the individual. Doctor and nurse who have broad interests and the social point of view can perform significant work in the factory and workshop in developing methods for establishing safe conditions concerning which we are at present talking a great deal but doing comparatively little.

Rendering first aid in cases of accidents or giving treatment for

petty ailments is but a part of the opportunity. The field for general observation is tremendous and the nurse, if properly trained, can be of great importance in the industrial world, through her knowledge of the effects of speeding up and nervous exhaustion. She ought to know at what time of the day the workers are most subject to accidents. She should be able to work out a system of periodical rests and trace the occurrence of fatigue, illnesses and accidents to conditions and causes. She should have something definite to contribute as to the number of hours that it would be safe to work at any given trade.

Working side by side with the doctor, if there is one, she should have evidence and data to bring him upon which he may develop scientific measures of prevention and precaution. The work of the doctor and nurse should be closely co-ordinated with that of the state factory inspection, in whose hands eventually the hygiene and sanitary condition of the factory will probably be placed and medically trained inspectors added to the staff.

In this discussion, I have not referred to home follow-up work by the nurse upon which some employers of labor place great weight. They give numerous illustrations of her ability to harmonize the relationship between employer and employee and suggest the elimination through her knowledge of the homes of certain elements of disturbance in the routine of the plant.

Department stores also have utilized the nurse, and occasionally the doctor. These officials report that it has been of advantage to them and to their employees on the whole. For service of this kind there is a demand for the right kind of nurse greater than the supply that the training schools provide.

In conclusion, I would repeat that doctors are needed in industrial establishments primarily for the study of occupational diseases, for the prevention of industrial poisoning and for surgical work. Nurses are required to assist the factory surgeons and to take general care of the girls, assisting them to regulate their diet and personal hygiene, caring for them when they suffer from vague symptoms of fatigue, over-strain and bad air.

In the light of the evidence already obtained, the public would seem obligated to the promotion of a policy of supervision and education that will bring official inspection to a standard requiring close knowledge of every industrial establishment and involving not only investigation of the sanitary conditions of the premises, but physical examination of the persons employed, that there may be assurance of their fitness for the work upon which they are engaged.

The medical inspection of industries would seem to be a logical extension of the police powers of the state. That intelligent employers have found it of practical economic value to engage the nurse and doctor for their benefit—and incidentally to the advantage of the employees—is an assurance of the wisdom of promoting a public sentiment for the supervision of the individual employees in every work-shop. It would seem to promise “to pay” for the state as well as for the employees.

Protection of the workers is only in its beginning. The education of the people at the bench and at the machine is essential. Through their intelligent demand for protection and safety the presence of doctor and nurse may become universal and democratic.

DR. ALETTA H. JACOBS, a prominent physician and woman suffragist of Holland, has been travelling in South Africa and writes to *Nosokomos* of December 6 her observations on nurses and nursing conditions in that part of the world. She finds English nurses and matrons and a general hospital system of management like that of England to be the prevailing thing in South Africa, though hospital buildings are usually rather unattractive and in that way not at all like England. She speaks approvingly of the advanced and desirable state of things brought about by the state examination and registration existing in South Africa, and mentions the universality of the three-years course as a minimum, while most nurses complete a fourth year before going up for examination. Because private duty is well paid, there is the same difficulty that we have in America in retaining good nurses in permanent hospital posts.

There are no signs of organization among nurses in South Africa. The need of association is often expressed, but no nurse leader has yet arisen. The vast distances would make national organization difficult, but Dr. Jacobs thinks local groups might succeed as a beginning. She says that Lady Gladstone, wife of the Governor of South Africa, desires to create an order of district nurses, but that the lamentable race-hatreds of the country will make this very difficult indeed, as the women of Africa strongly resent and resist the British influence and the influx of British nurses that Lady Gladstone would naturally desire to bring about. So the bitter fruits of war survive to poison character and hinder progress. When shall women set their faces like flint against its brutal dominance?